## REMARKS

Claim 1, 2, 3, 8 and 10 have been canceled and new claim 11 has been added. Accordingly, claims 4-7, 9 and 11 are pending in the application.

Claims Rejections under 35 USC § 112

Claims 2-3 and 5-6 stand rejected under 35 USC § 112, second paragraph, as being indefinite for the reasons set forth in numbered paragraph 3 on pages 2 and 3 of the action.

By this amendment, claims 2 and 3 have been canceled and claims 5 and 6 have been amended in the manner in which it is believed these claims now satisfy all the requirements of 35 USC § 112.

Claims Rejections under 35 USC § 102 and § 103

Claims 1-6 stand rejected under 35 USC § 102(b) as being anticipated by Bez, US Patent 5,482,443.

Claims 1-10 stand rejected under 35 USC § 103(a) as being unpatentable over Sugiyama et al., US Patent 6,122,049 in view of Bez '443 and Gerheardt et al., US Patent 6,712,587.

For the reasons set forth hereafter, it is submitted that the claims, as amended, patentably distinguish over the cited prior art.

Patentability of the Claims

New claim 11 has been added which claims Applicants' invention with greater particularity. Applicants' invention, as now set forth in new claim 11 is directed to a liquid chromatograph pump having an upstream-side and a downstream-side plunger pumps connected fluidly in series. A first check valve is arranged at an upstream side with respect to the upstream-side plunger pump to prevent a liquid from flowing from the upstream-side plunger pump to the upstream side with respect to the upstream-side plunger pump when the plunger of the upstream side plunger pump moves forward to pressurize the liquid in the upstream-side plunger pump and to allow the liquid to flow toward the upstream-side plunger pump from the upstream side with respect to the upstream-side plunger pump when the plunger of the upstream-side plunger pump moves backward to take the liquid into the upstream-side plunger pump.

A second check valve is also claimed which is arranged between the upstream-side and the downstream-side plunger pumps to prevent the liquid from flowing from the downstream-side plunger pump toward the upstream-side plunger pump when the plunger of the upstream-side plunger pump moves backward to take liquid into the upstream-side plunger pump and the plunger of the downstream-side plunger pump moves forward to pressurize the liquid in the downstream-side plunger pump, and to allow the liquid to flow from the upstream-side plunger pump toward the downstream-side plunger pump when the plunger of the downstream-side plunger pump moves backward to take the liquid into the downstream-side plunger pump and the plunger of the upstream-side plunger pump moves forward to

pressurize the liquid in the upstream-side plunger pump to make a flow rate of the liquid discharge from the upstream-side plunger pump greater than a flow rate of the liquid stored in the downstream-side plunger pump.

Support for the new claim 11 is found in Figs. 1, 2, 3a, 3b and 5 and the parts of the specification corresponding to these figures.

None of the cited Bez '443, Sugiyama et al., '049 or Gerheardt et al., '587 patents disclose first and second check valve as now recited in new claim 11.

Bez is directed to a multistage vacuum pump utilizing a single piston and cylinder assembly. Sugiyama et al., is directed to a liquid chromatographic apparatus having a flow cell provided with a cell body having an inlet flow passage, a detection flow passage, an outlet flow passage and windows fixed to the cell body on both sides of the detection flow passage. Gerheardt et al., is directed to a hydraulic amplifier system for an ultra-high pressure liquid chromatography system which includes a hydraulic cylinder comprising a primary piston chamber in which a primary piston is disposed and a secondary piston chamber in which a secondary piston is disposed. Accordingly, new claim 11 is patentable over these references, taken either alone or in combination.

Claim 4 is directed to a liquid chromatograph pump having a cylinder with an inner wall surface, and a plunger reciprocating in the cylinder. The plunger is formed on its outer surface with a stepped part along the driving direction of the plunger so as to define a working chamber between the stepped part and the inner wall surface of the cylinder wherein an end part of the plunger on the side remote from the drive side, is exposed to a gas atmosphere.

Claim 4, in which an end part of the plunger on the side remote from the drive side is exposed to a gas atmosphere different from the liquid to be pumped, is not disclosed by any of the cited references relied upon by the Examiner. Accordingly, claim 4 also is believed patentable.

Claims 5 and 6, which depend from claim 4, have been amended to recite a plurality of the cylinders as first and second cylinders and a plurality of the plungers as first and second plungers to form respective first and second pumps. This amendment not only satisfies the rejection under 35 USC § 112 but further distinguishes the claims over the references cited by the Examiner.

Claim 7 which is dependent from claim 5 and claim 6, and claim 9 which is dependent from claim 11 and claim 4, are also submitted to be patentable for the reasons set forth with the claims from which they depend, as well as for the additional structure recited therein.

Accordingly, it is submitted that claims 4-7, 9 and 11 are now patentable.

## Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger, Malur & Brundidge, P.C., Deposit Account No. 50-1417 (referencing attorney docket no. 500.43232X00).

Respectfully submitted,

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